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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/774,065	01/31/2001	Jong-Sung Kim	053785-5002	1818

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EXAMINER

NGUYEN, HOAN C

ART UNIT PAPER NUMBER

2871

DATE MAILED: 08/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/774,065

Applicant(s)

KIM, JONG-SUNG

Examiner

HOAN C. NGUYEN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 6-9 and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Nakahara et al. (US6104467A).

In regard to claims 1-3, Nakahara et al. teach (Figs. 1 and 4, col. 5 line 65 to col. 7 line 32) a method of fabricating a liquid crystal display panel having first and second substrates, the method comprising the steps of

- forming first and second orientation films (alignment films 6 and 9) on the first and second substrates (1 and 2) , respectively;
- forming a seal material (seal member 10) at edges of the first substrate;
- assembling the first and second substrates with each other;
- performing a first pressurizing and heating process on the first and second substrates to form a first cell gap with pressure at normal temperature of 20-40° as shown in Fig. 4 (normal temperature pressuring process);
- injecting a liquid crystal material into the first cell gap;

- performing second pressurizing and heating process on the first and second substrates to form a second cell gap with heating and pressurizing process as shown in Fig. 4 (temperature increasing up to 180 °C);
- sealing the second cell gap.

wherein the second cell gap must be narrower than the first cell gap due to further pressing and rising temperature up to 180 °C.

In regard to claims 6 and 12, Nakahara et al. disclose as conventional art (Figs. 1 and 4) a method of fabricating a liquid crystal display panel having first and second substrates, wherein sealing is performed by using a thermoplastic resin (thermosetting resin including glass beads or the like operating as a spacer inside the seal is used, and glass beads or plastic beads). Thermosetting resin can be thermoplastic used as conventional art for adhering under heating process.

In regard to claims 7-9, Nakahara et al. teach (Figs. 1 and 4) a method of fabricating a liquid crystal display panel having first and second substrates, the method comprising the steps of:

- assembling the first substrate 1 with the second substrate 2;
- performing a first pressurizing and heating process on the assembled substrates to have a first cell gap;
- injecting a liquid crystal material into the first cell gap;
- performing second pressurizing and heating process on the substrates to have a second cell gap;
- sealing the second cell gap;

- cutting the sealed panel into a unit cell, which is obvious step performing for cleaning the sealing materials.

wherein the second cell gap must be narrower than the first cell gap due to further pressing and rising temperature up to 180 °C.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a method of fabricating a LCD panel as Nakahara et al disclosed with (a) cutting the sealed panel into a unit cell obviously for cleaning the sealing materials and (b). sealing performed by using a thermoplastic resin for adhering under heating process.

1. Claims 1, 4-5 and 7, 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shin et al. (US6086443A).

Shin et al. teach (Fig. 1 col. 1 lines 21-48, Figs. 3-6, experiment 1, col. 6 lines 15-39) a method of fabricating a liquid crystal display panel having first and second substrates, wherein

- The first cell gap should be less than $5.7\mu\text{m}$ at first pressurizing and heat process (hot press step) with 0.6 kg f/cm^2 , thus cell gap is at least $5\mu\text{m}$ ("at least $5\mu\text{m}$ " means greater or equal $5\mu\text{m}$) for adhering seal members to substrates.
- the second cell gap should be in a range $4.41\text{--}4.56\mu\text{m}$ or at least $4\mu\text{m}$ ("at least $4\mu\text{m}$ " means greater or equal $4\mu\text{m}$) at second pressurizing and

heating process with P1/P2/P3 (0.1/0.5/0.3 kg f/cm²) of the end seal step for adhering the spacers to substrates.

However, Shin et al. fail to disclose explicitly the first and second orientation films.

It was well known art that the orientation films on substrates for aligning the liquid crystal molecules to modulate the light.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a method of fabricating a LCD panel as Shin et al disclosed with the orientation films on substrates for aligning the liquid crystal molecules to modulate the light.

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Matsuo et al. (US 5909266A) disclose a process and apparatus for producing electrode plate and process for producing liquid crystal device including the plate with pressurizing.

Hotta et al. (JP 62150218A) disclose MANUFACTURE OF FLEXIBLE ELECTROOPTIC ELEMENT sealing with thermoplastic.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (703)

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306-0472. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, SIKES L WILLIAM can be reached on (703) 308-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-8178 for regular communications and (703) 308-5841 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

HOAN C. NGUYEN
Examiner
Art Unit 2871

chn
August 8, 2002



TOANTON
PRIMARY EXAMINER